

# Space News Roundup

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No. 9

## Salary freeze won't stop step increases

But Clinton plan means JSC must do its share of belt tightening

By Kelly Humphries

JSC will be in a hiring freeze for most of fiscal 1993 and civil service employees will not receive a cost-of-living pay increase in January 1994, but they will continue to get regularly scheduled step increases and promotions, Human Resources Director Harvey Hartman said this past week.

Hartman's comments were in response to questions about the

effects of President Bill Clinton's statement about "a freeze in federal salaries" in his State of the Union address and a recent executive order that sets a target of reducing government employment by 100,000 over the next three years through attrition.

In addition, the hiring freeze means that the center's plan of having civil service employees perform more of the work in Work

Package 2—following a \$10 million cut in contracted work—will need to be adjusted.

"We, like employees of every company in the area and across the country, are going to have to do our share to tighten our belts," Hartman said. "Our goal is to try to do it in as controlled a fashion as we can and to make our resources go as far as they will with as much common sense as we can possibly

muster."

Civil service comparability, or cost-of-living increases, are arrived at by subtracting half a percent from the Employment Cost Index. While this formula is specified by law, the President has the option of proposing or omitting the increase from each year's budget.

Clinton has decided not to submit a raise for 1994, which under the formula would have been 2.2

percent. Eliminating that raise across the government will reduce expenditures by hundreds of million dollars. JSC's part of those savings will be about \$4.5 million.

"There are no proposals on the table in terms of freezing promotions or step increases," Hartman said, "and we see nothing of that nature on the horizon."

Hartman said it also appears that Please see **BULLETINS**, Page 4

## Hydraulic line break stalls next launch

A hydraulic line broke during Tuesday's flight readiness test of *Columbia's* main engines and aerosurfaces, forcing Kennedy Space Center technicians to cut short the test and delay the STS-55 launch.

Technicians at Launch Pad 39A replaced the 3/8-inch flex line in the area Wednesday and cleaned up

the hydraulic fluid that had been sprayed around the engine compartment. The hydraulic line provides actuator pressure to retract the liquid hydrogen umbilical plate before the external tank door closes.

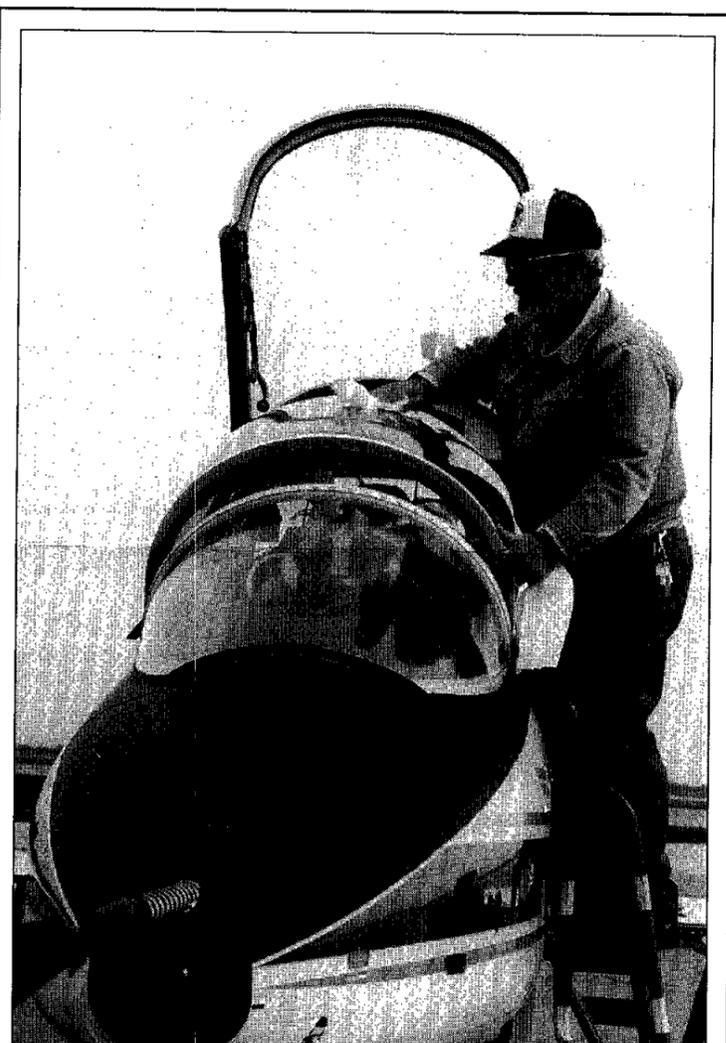
Initial assessments indicated that the launch could occur as soon as March 16, but a more definite date was not immediately available.

As the failure analysis and clean-up continue, technicians planned to examine the main engines and propulsion system including electrical connectors and harnesses, solenoid valves and thermal insulation, and inspect the main engine No. 2 heat shields, which were near the line break.

Also last week, the Getaway Special experiment canisters in the payload bay were serviced and reinstalled.

Meanwhile, STS-56 orbiter *Discovery* was rolled over from the Orbiter Processing Facility to the Vehicle Assembly Bldg. and hoisted

Please see **DISCOVERY**, Page 4



JSC Photo by Andrew Patnesky

**AND CHECK THE OIL, TOO—J.J. Havelock, T-38 crew chief for Northrop Corp., prepares one of NASA's astronaut training aircraft for flight at Ellington Field. In addition to cleaning the windshield, he refuels the aircraft and checks their mechanical condition prior to flight. Havelock has been working on NASA aircraft for 25 years. For the past 10 years, he has been in charge of making sure that the astronaut training aircraft are safe to fly.**

## Managers say NASA smarter, streamlined after station review

Top NASA managers told a congressional subcommittee Tuesday that they have taken "quick, decisive and effective action" to understand projected Space Station *Freedom* cost growth, and that the agency is coming out of the review "smarter and more streamlined."

Arnold Aldrich, associate administrator for Space Systems Development also told Rep. Ralph Hall's Subcommittee on Space—part of the House Science, Space and Technology Committee—that he plans to factor in the results of an independent cost assessment review by the time the Space Station *Freedom* Program arrives at its final determination of baseline costs.

Space Station Program Director Dick Kohrs, JSC Director Aaron Cohen and JSC Space Station Projects Office Manager Jack Boykin were part of the panel that appeared before the subcommittee.

NASA Administrator Daniel S. Goldin, who did not testify, sent a letter to Hall, explaining that he had commissioned the independent review several weeks ago and said that the review should be complete by mid-April.

"The Space Station *Freedom* team has been working diligently to address the current budget problems and are prepared to discuss their activities with the committee,"

Goldin's letter read. "I have, however, been concerned with regard to the validity of the present cost and schedule estimates. With this in mind, and recognizing your committee's recommendations relative to the need for an independent cost estimating activity, I



commissioned such an effort a few weeks ago, separate from the program activities, to provide me with an assessment."

Goldin said the reviews are in response to President Clinton's stated desire for a restructured space station that is more efficient and effective and capable of producing greater returns on America's investment through reduced development, operations and utilization costs.

Aldrich assured the subcommittee that NASA is working hard to reduce the costs to manageable levels and making changes to strengthen its processes and management.

He explained the history of the cost growth, which first drew NASA's concern in September and led the agency to notify congressional staff. By January, however, revised estimates for fiscal 1993-95 showed much larger projected growth that exceeded planned reserves.

"The widely reported growth of \$1.08 billion was an initial projection that we do not now accept," Aldrich

Please see **GOLDIN**, Page 4

## Lunar and Planetary Science gathering March 15-19 at JSC

By Kari Fluegel

Scientists from around the world will meet in Houston to discuss research covering the universe at the 24th annual Lunar and Planetary Science Conference March 15-19 at the Johnson Space Center.

More than 700 researchers will converge at JSC's Gilruth Center for five days of presentations that will include data from Venus provided by the Magellan spacecraft; new information from the Galileo spacecraft now approaching Jupiter after a high speed pass by the Moon and Earth; and recent findings about the Chicxulub crater off the Yucatan Peninsula that many believe could explain the demise of dinosaurs on Earth.

"Even after 24 years, the confer-

ence gets more interesting every year," said Douglas Blanchard, chief of JSC's Solar System Exploration Division. "This year the program is especially strong and covers an interesting variety of planetary topics. We expect that our colleagues will once again find the conference a rich source of new data and ideas."

The public is invited to a special discussion about planetary science at 8 p.m. March 15 in Teague Auditorium. James Arnold of the University of California at San Diego will present "Cosmic Rays Probe Planetary Objects" and Maria Zuber of Johns Hopkins University will discuss "Gravity and Topography Fields of the Terrestrial Planets."

Other presentations include:

Please see **LUNAR**, Page 4



Photo by Debra Rueb

**Participants in the 23rd annual Lunar and Planetary Science Conference pore over photographs of the lunar surface in the Lunar and Planetary Institute's Center for Information and Research Services. This year's participants also will have a chance to review research and photos.**

Plan due in April

## External tank management coming to JSC

In a move to consolidate and strengthen management of the Space Shuttle Program, NASA plans to move management of the external tank program to JSC from Marshall Space Flight Center.

NASA Administrator Daniel S. Goldin directed Associate Administrator for Space Flight Jeremiah Pearson to develop a plan for consolidating the contract and program management effort at JSC.

The plan and projected impacts are due in April. The impact on both centers will be included in the assessment.

"The external tank, in absence of any major redesign or change, is in

Please see **TANK**, Page 4

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## Ticket Window

The following tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m.-2 p.m. weekdays. For more information, call x35350 or x30990.

Space Center Houston — Discount tickets: adult, \$7.50; child (3-11) \$4.50; commemorative: \$8.75.

Metro tickets — Passes, books and single tickets available.

Movie discounts — General Cinema, \$4.50; AMC Theater, \$3.75; Loews Theater, \$4.

Entertainment '93 and Gold C coupon books, stamps, Walt Disney Club memberships, business cards, stamps and souvenirs also available.

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## Gilruth Center News

**Sign up policy** — All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance. For more information, call x30304.

**EAA badges** — Dependents and spouses may apply for photo identification badges from 6:30-9 p.m. Monday through Friday. Dependents must be between 16 and 23 years old.

**Defensive driving** — Course is offered from 8 a.m.-4:30 p.m. April 17. Cost is \$19.

**Weight Safety** — Required course for employees wishing to use the Gilruth weight room is offered from 8-9:30 p.m. March 10 and 25. Pre-registration is required; cost is \$5.

**Aerobics** — High/low-impact classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

**Exercise** — Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

**Aikido** — Martial arts class meets Tuesdays from 6:15-8 p.m. Cost is \$15 per month.

**Tennis** — Beginner tennis class meet 5:15-6:45 Mondays starting March 1. Advanced beginner class meets 5:15-6:45 p.m. Wednesdays starting March 3. Cost is \$32 for six weeks.

**Scuba** — Four-week session meets Tuesdays and Thursdays beginning March 25 at the Gilruth Center. Total cost is \$190, with \$50 paid at registration.

**Country and western dance** — Beginner class meets from 7-8:30 p.m. Mondays, beginning March 1. Intermediate classes meet from 8:30-10 p.m. Mondays. Six-week course costs \$20 per couple.

**Ballroom dance** — Beginner, beginner-intermediate, intermediate and advanced classes will meet Thursdays for eight weeks beginning March 4. Cost is \$60 per couple.

**Fiction workshop** — Five-week creative writing class meets Wednesdays beginning March 31. Cost is \$80.

**Softball tournament** — The Pre-season Men's Open C Softball Tournament will be March 27-28 at the Gilruth. Entry deadline is 7 p.m. March 25; cost is \$95 per team.

**Softball sign-ups** — Openings are available for softball teams to sign up in the mixed C recreational, men's C, men's A and men's over 40 leagues. Call x30304 for more information.

**Fitness program** — Health Related Fitness Program includes medical examination screening, 12-week individually prescribed exercise program. Call Larry Weir, x30301.

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## Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

### Property

Sale: Dickinson, 4-3-2D, study, game rm, screened porch, lg kitchen w/Jennaire, new ceramic tile, util rm inside, lot w/trees, \$129.9K. Coy, x39282 or 335-0641.

Sale: Sycamore Valley, 3-2-2, new carpet, vinyl, lg kitchen, den, living rm, 1800 sq ft, \$74.9K. Ann Marie, 333-1700 or 481-5465.

Sale: 3-2-3, 2 story, boatslip, appraised at \$126,777, sell \$122.5K. 538-1849.

Rent: Perland, 3-2-2, avail 4-1-93, \$700/mo, \$500 deposit. 480-9036.

Rent: Galv condo, furn, sleeps 6, Seawall & 61st St, wknd/wkly/daily. Magdi Yassi, 333-4760 or 486-0788.

Lease: CL, Oakbrook West, 4-2-5-2, both formals, FPL, fenced, no pets, \$985/mo. 488-5210.

Lease/Sale: CLC, 2-1-1.5, ceiling fans, new carpet, paint, no pets, \$525/mo. 326-1944.

Rent: CLC, Oakbrook, 3-2-1, storage bldg, indoor util rm, \$750/mo, util + dep. 488-3265.

Rent: Sagemont, room, \$55/wk + dep. 481-5034.

Sale: Dickinson Bayou, waterfront, 4-2-5-2, pool, 100 yr old trees, .0738 acre, sec sys, 2 water conditioners, \$229K. x34354 or 337-1640.

Sale: LC, Golden Acres lot, 82' x 122', \$10K. x36514.

Sale: Pearland, 3-3-3, approx 3300 sq ft, on golf course, balcony, built in spa, ex cond. 481-1469.

Rent: Taos, NM, ski house, mountain view, sleeps 4, wkly rentals. 532-2082.

Sale/Lease: Baywind I condo, 2-1.5, W/D, ceiling fans, new paint, no pets, \$525/mo. 326-1944.

Sale: Sagemont, 2-3-5-2, 10 yr old Victorian style, FPL, island kitchen, corner lot, low 60's. Debbie, 282-3492 or 484-1814.

### Cars & Trucks

'90 GEO Metro, 4 DR, AM/FM, 5 spd, \$3.6K OBO. Mandy, 283-5779 or 480-1236.

'85 Honda Accord hatchback, auto, 86K mi, AC, new tires, stereo, need some body work, ex eng, \$2.5K OBO. Beth, x33078.

'80 Honda Accord LX, wrecked front left, great motor, trans, remaining body parts, \$500 OBO. 488-7728.

'85 Subaru GL, 4 DR, PW/PL, AC, AM/FM, many new parts, \$2.4K. Robert, x30833 or 534-4934.

'86 Toyota Corolla, SR5 coupe, high miles, gray w/gray and blk int, runs good, \$3.7K. Rene x38334 or 331-1654.

'82 Plymouth Horizon, air, radio/cass, low miles, 282-4849 or 409-925-7839.

'79 Datsun 280ZX, new paint, 92K mi, \$2.2K. x32458 or 333-9518.

'63 Olds Super 88, antique, 4 DR, hardtop, AC, orig title, one owner, \$3.8K or trade for '86 full sz Sedan. 335-1480.

'82 Olds Regency 98 Brougham, 89K mi, V8, \$1.5K OBO. 486-8380.

'85 Camaro, parts. 481-5034.

'84 Cadillac El Dorado, all pwr, leather seats, AM/FM/cass, good cond, nonsmoker car, \$3595. Larry, x31794 or 481-9058.

'74 Pinto wagon, 100K mi, \$400. Ken, x45506 or 333-6234.

'90 Toyota Supra turbo, maroon/gray, CD, targa top, 19K mi, ex cond, \$19.5K. Caroline, 554-7761.

'90 Porsche 911, Carrera 2, red/tan leather, 5 spd, builtin front and rear radar, 15K mi, one owner, ex cond, \$50K. x38723 or 334-1455.

'85 Chevy Silverado SWB, low miles, new tires, loaded, ex cond, \$5.8K OBO. Ed, x32637 or 992-5467.

'79 Chrysler LeBaron, 4 DR, engine good, \$1.4K. 481-2535.

'81 Mazda GLC, 30mpg in town, some rust, drive train in good cond, new exhaust, tires, wheel bearings, need clutch but driveable. x38823 or 339-2198.

'89 Honda Accord, low miles, ex cond, \$8K. x32987.

'86 Toyota Supra, sunroof, 5 spd, performance pkg, 60K mi, ex cond, \$6.5K OBO. Bob Adams, x32567 or 488-3314.

'86 Nissan Stanza wagon, tune up, lots of storage, good cond, \$3K. 996-5191.

'78 Porsche 928, brwn w/leather int, auto, ex cond, 75K mi, \$8.5K. Bill, 244-8889.

'80 Mazda RX7, 5 spd, sunroof, blk w/brown int, 10K mi on new eng, needs little work, \$2K. 333-4999.

'81 Chevy El Camino PU, PS/PB/PW/PL, cruise, AC, new rebuilt eng, \$4K. 420-3166.

'84 GMC S15 PU, longbed, AC, PS/PB, good cond, \$3.1K OBO. David, 244-0092.

**Boats & Planes**

'18' Sailable canoe w/sail, flexible ARS shell, mountable on top of car, \$500. Minh, x30992 or 484-2456.

'76 16' Invader Trihull; '85 Yamaha 90 hp motor, low hours, galv trlr, \$2.2K. x39290 or 947-9385.

'92 17' Cajun Fish-n-Ski, 120 hp Johnson O/B, trolling motor, depthfinder, cover, ex cond, \$12K OBO. Jennifer, x47583 or 326-5206.

2 Windsurfer sails, \$375. Bill, 554-6242.

Sunfish sailboat, race equipped, ex cond, \$1.5K. x38228 or 326-2995.

24' Sea Ray offshore cruiser, new uphol, rebuilt eng, outdrive, galv trlr, \$3.5K. Don, x38039 or 333-1751.

'88 Bayliner 1700 Capri ski boat, open bow, v-hull, conv top, 85 hp O/B, magnum drive-on trlr, \$6K. Ed. 486-0705.

Handheld VHF FM marine transceiver, 4.5 watts, TX pwr, scanner w/CH16 priority, NI

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## Dates & Data

### Today

**Cafeteria menu** — Special: beef and macaroni. Entrees: ham steak, Parmesan steak. Soup: chicken and rice. Vegetables: green beans, carrots, au gratin potatoes.

### Tuesday

**Lunch and learn** — The American Institute of Aeronautics and Astronautics Automation and Robotics Technical Committee will meet a 11:30 a.m. March 9 at the Gilruth Center. Carlos Roithmayr of JSC's Navigation, Control and Aeronautics Division will discuss "Kane's Method and Its Application in Robotics." For more information, call Zafar Taqvi at 333-6544.

**Cafeteria menu** — Special: Mexican dinner. Entrees: potato baked chicken, barbecue spare ribs. Soup: tomato. Vegetables: squash, ranch beans, Spanish rice, broccoli.

### Wednesday

**Freedom Fighters meet** — The Space Station Freedom Fighters will meet at noon and 5 p.m. March 10 in Rm. 160 of the McDonnell Douglas Tower, Space Center Blvd. and Bay Area Blvd. For more information, call David Cochran at 482-7005.

**Astronomy seminar** — The JSC Astronomy Seminar will feature an open discussion meeting at noon March 10 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

**Lunch and learn** — The American Institute of Aeronautics and Astronautics' Fluid Dynamics Technical Committee will meet at 11:45 a.m. March 10 in Gilruth Center Rm. 207. Dr. Rakesh Bhargava will discuss "An Experi-

mental Investigation on the Combined Effects of Initial Roughness and Free Stream Turbulence on the Turbulent Boundary Layer Development." For more information, call Bhargava at 983-9371.

**Cafeteria menu** — Pepper steak. Entrees: baked scrod, liver and onions, ham steak. Soup: seafood gumbo. Vegetables: beets, Brussels sprouts, green beans, whipped potatoes.

### Thursday

**Lunch and learn** — The American Institute of Aeronautics and Astronautics' Computer and Software Systems Technical Committee will meet at 11 a.m. March 11 in Lockheed Plaza 3. A panel discussion will look at perspectives in software testing. For more information, call Cora Carmody at 282-6580, or Tek Shrini at 282-6643.

**SSQ meets** — The Society for Software Quality will meet at 5:30 p.m. March 11 at the Days Inn on NASA Road 1. Penny Muncaster-Jewell of GHG Corp. will ask "Does an Object Oriented Approach Always Equate to Quality Software?" For more information, call Felix Balderas at x31945.

**Cafeteria menu** — Special: smothered steak with dressing. Entrees: chicken and dumplings, corned beef with cabbage. Soup: beef and barley. Vegetables: spinach, cabbage, cauliflower au gratin, parsley potatoes.

### Friday

**JAS meets** — The JSC Astronomical Society will meet at 7:30 p.m. March 12 at the Lunar and

Planetary Institute on Bay Area Blvd. The topic will be "Lunar Madness Night," and members are encouraged to bring their telescopes. For more information, call John Erickson at x32902.

**Cafeteria menu** — Special: tuna and salmon croquette. Entrees: pork chop with yam rosette, Creole baked cod. Soup: seafood gumbo. Vegetables: Brussels sprouts, green beans, buttered corn, whipped potatoes.

### Monday

**Cafeteria menu** — Special: Italian cutlet. Entrees: braised beef ribs, chicken a la king, enchiladas with chili. Soup: cream of broccoli. Vegetables: navy beans, Brussels sprouts, whipped potatoes.

### March 15

**Call for papers** — The American Institute of Aeronautics and Astronautics Houston Section is seeking papers for its 18th annual Technical Symposium, to be hosted by the University of Houston-Clear Lake in mid-May. Abstracts of 250 words or less and a completed NASA Form FF427 are due by March 15 to Dick Bennett, MDC/314CA, 16055 Space Center Blvd., Houston, 77062. For more information, call 283-1956.

### March 17

**Astronomy seminar** — The JSC Astronomy Seminar will meet at noon March 17 in Bldg. 31, Rm. 129. Jim Oberg will discuss "Fast Terra-Forming of Mars." For more information, call Al Jackson at 333-7679.

### Household

Pair of antique brass/iron twin beds, \$350/pr. 488-7728.

Entertainment center, whitewashed oak, ex cond, \$450. 480-9425.

Maroon/red liquor bar, \$35; baby cradle on rocking/locking trestle w/matt, yellow fabric cradle liner, \$50; swivel rocker, rust, \$20; rectangular coffee tbl, \$10. x31698.

Sofa, lg, 3 cushion, green/tan, good cond, \$65; brwn rocker, \$40. 482-2450.

Wall mirrors, ornate gold leaf frames, 1 med, \$50, 2 lg, \$100/ea; solid oak drop-leaf dining tbl w/4 side chairs/pads, \$125. 488-6724.

Bdrm furn, Medter style, dk walnut, 2 mirror triple dresser, \$200; 5 drwr chest, \$150; two 2 drwr bedside tbls, \$75/ea. Qn/dbl bed frame w/hdbd, \$100, or \$500 takes all. Bob, x33705 or 482-0755.

Antique green china cabinet, tbl, 6 chairs, \$200. Debbie, x36034 or 332-5709.

Rectangular glass top dinette tbl w/acrylic/brass base, 4 mauve uphol brass chairs, \$150. Barbara, x30981 or 481-1239.

8' 4 cushion sofa, ex cond, \$60. 486-7380.

Hide-a-bed sofa, blue/blk/wht fabric, delivery avail, \$145 OBO. Myron, x39409 or 409-925-1942.

TV stand, \$20 OBO; recliner, \$60 OBO; 10,000 btu AC, \$350 OBO. 286-4882.

Blk melamine, modular entertainment center; contemp style, ex cond, \$300. Katie, x33185.

Qn sz motionless waterbed w/box springs, heavy duty frames, ex cond, \$250 OBO. Debbie, 482-0386.

Drapes, balloon valances, Roman shades, several styles/colors; kg sz hdbd, comforter, dust ruffle, shams, dk green/beige. 474-3517.

Fruitwood sofa, beige, ex cond. 941-3262.

Used carpet, cinnamon brwn, good cond, 150 yds, \$3/yd. Mark, x38013 or 992-4132.

Dbl bed boxsprings, \$60. Judith, x39175 or 480-2244.

### Wanted

Want students to join a Russian language class taught by a Rice Univ prof, students should be at intermediate level w/ at least 2 yrs exp. Rick, x36042 or Keith, x38024.

Want wheelchair in good cond. Dana, x30747 or 332-7074.

Want used model airplanes and equipment. 420-1097.

Want old vacuum cleaners from 30's, 40's, or 50's, Electrolux, Airway, Filter Qn, Rainbow, Rexair, Compact, Westinghouse, good working cond. 524-6699.

Want riders for vanpool from Meyerpark at 610 to NASA, 8:00 - 4:30. Don Pipkins, x35346.

Want used 40 MB or larger MFM HD, good cond. x32071 or 980-9230.

Want marina village camping membership; tow dolly for compact car. x33538 or 487-0155.

Want 2 nonsmoking roommates to share house in Pipers Meadow or Sterling Knoll,

flex start date. Michelle, x38032 or 333-9235.

Want basketball goal in good or ex cond. x39449.

Want med or lg sz elec kiln and potter's wheel. Nelda, 286-3063 or 335-2426.

Want to buy cheap used car. 867-8820.

Want female softball player for co-ed rec level team. Steve, x32005 or 474-5226.

Want Genny Craig's motivational tapes and book. 932-9554.

### Miscellaneous

Wedding gown, long sleeves, beaded sweetheart neckline, med length train, was \$975, now \$400. Robert, x30833 or 534-4934.

Amara microwave, \$35; Welbilt 13 cu ft refrig, \$90; two 32" x 5' insul garden windows, \$95/ea; wood mouldings and windows. Don, x38039 or 333-1751.

White foxtail jacket, \$100; ladies Judy Rankin golf clubs, bag, woods, irons, putter, wedge, shoes, sz 8, \$100. x34236.

French Provincial sofa, beige; Bimini top for C.J.7, blk; Remington Rand typewriter, older style, heavy metal case. 282-4849 or 409-925-7839.

Brunswick Imperial Bowling ball, 16 lb, \$25; Wilson Relic and Coin Detector, \$100. x31971.

Exec desk, solid wood/veneer top, 6 drwr incl file drwr, swivel chair, \$200; contemp dinette, smoked glass top, chrome frame, \$175. Michelle, x36792.

Mnt bk parts; T-6 alum bar (120 g), stem (1-1/4), marin seat, forks, (1-1/4), Deore LX frnt derailleur, \$10/ea; Deore LX wheel set, \$99 both; Thule bike carrier, \$30. Trey, x36759 or 992-1076.

30 x 50 dbl pedestal office desk, \$50; desk chair, \$20; secretarial chair, \$10. 486-8380.

Blk tux, S/B notched lapel, 39R, \$85. Tom, 282-5405 or 534-4142.

Leather briefcase, was over \$100, now \$50. 486-8266.

Gympac 2500 Fitness sys, bench/wall unit for weight training, needs assembly, was \$230, now \$100 OBO. 244-8985.

Baseball cards, all types, old and new. Greg, 286-1309.

Traditional ivory wedding gown, fits sz 6-8, was \$900, now \$400. Laura, x52388 or 532-1557.

7 hp Craftsman riding mower, good cond, 25" cut, \$350; alum sliding dr track for 1/4 thk wood or glass door, 5 sets of tracks ea top/bottom track 6' long, \$18/set. 921-7212.

The Gerson Club will meet the first Monday of each month. 326-5207.

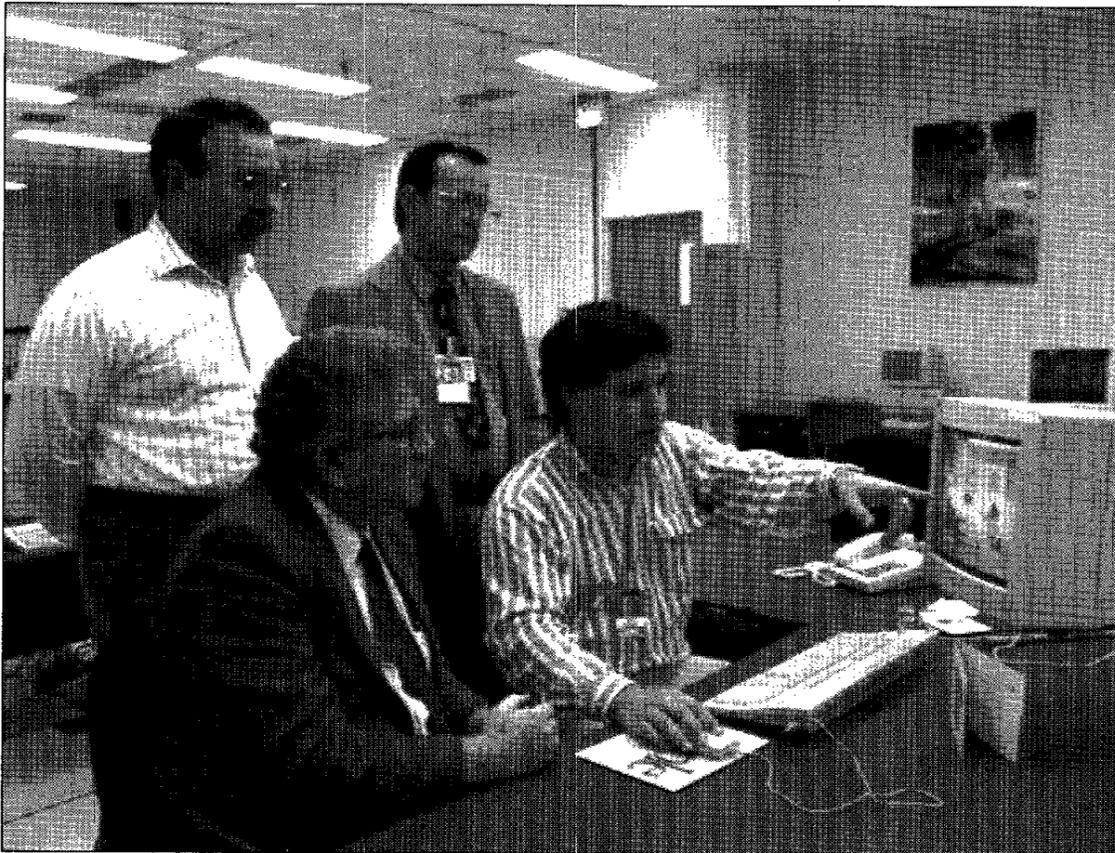
Satin/lace wht wedding dress, sz 7/8 w/chapel train, \$900 new, make offer; two wht veils; small microwave. 996-7680.

Sm util trlr, 6' bed, big wheels, ex cond, \$250. x35180 or 326-3706.

Sears free weight set, bench, perfect for beginners, \$50. 335-0800.

Assorted golf balls, 3 dz, \$12; 6 dz, \$20; 20 dz, \$35. Ray, x31748 or 476-9664.

Full bridal slip, \$50. Barbara, x30981 or 481-1239.



# Challenging the Challenged

## Technology Utilization project to help handicapped students learn basic language skills

By Kelly Humphries

**B**ob Way sits at his Macintosh computer with a simple color drawing of a room — the kind you might see in a children's book — on the screen. The drawing includes normal furnishings such as a couch, a clock, a lamp, a television and a plant.

Using the computer's mouse, Way points and clicks on the clock and the computer speaks: "This is a clock." Then, he changes the mode the computer is running under and it speaks again: "Find the clock." When he clicks on the clock, the timepiece does a flip on the screen and the computer says "That's right."

Way, of the Information Systems Directorate's Software Technology Branch, is working to apply JSC-developed Intelligent Computer Aided Teaching concepts to commercial software that helps teach basic language skills to children with disabilities. Most of the demonstration covers the existing software's capabilities, although Way has added the clock's flip as a visual reward for the student.

### Space Act Agreement

Under a new Space Act Agreement with Laureate Learning Systems Inc., those JSC developments eventually will allow the computer to assess how well the target student is doing in the program so that it can increase or decrease the level of difficulty for the students, who range in age from 5 years old to teenagers but are at a learning level of 18 to 30 months. This will free the teachers using the software, most of whom are in public school special education classes, from having to adjust the software as the student progresses.

"We don't want to frustrate the students, but we don't want to make it too easy, either," said Way, a Lincom employee who has been working at JSC for the past four years with the University of Houston's Bowen Loftin to develop ICAT products for education such as an Intelligent Physics Tutor.

### Technology Transfer

The project is part of JSC's Technology Transfer Program, which is designed to team JSC scientists and engineers, public sector organizations and industry to create new or improved commercial products that will benefit the public.

JSC's Technology Utilization Office negotiated the Space Act Agreement with Laureate Learning, a leading publisher of talking software for special needs, over a period of three months and is continuing to provide project guidance and funding, said Bill Stevens, the application engineering project manager.

"This project represents a look at the future as NASA programs emphasize technology transfer in their development," Stevens said.

"We in the Technology Utilization office are constantly searching for technologies that can be applied to society's needs."

Of the 20 million people in the United States with some form of disability, more than 4 million are infants, children or young adults. A primary focus of early intervention and special education programs for young children is the development of basic language and communication skills. Without a firm understanding of basic concepts, children will be unable to succeed in school programs.

Education research has shown that using "talking" computers to teach emerging language skills can significantly increase those skills in young children with disabilities.

During a series of meetings last summer, JSC and Laureate conceived the Early Language Intervention System. ELIS will use expert systems techniques to provide individual emerging language instruction to young children at risk of developing disabilities and children who have not yet developed basic language skills and concepts.

"What we're doing now is working with Laureate directly to add new ideas into their existing software to make it adaptable to students," Way said, "and then the ELIS plan is to develop one coherent piece of software that merges a lot of their current interface technologies with a unifying teacher intelligence package."

For example, in Laureate's current

software the teacher can disable an item in the picture so that the computer won't respond when the student points to it. Way has added the capability to actually remove an item from the picture so the student won't be confused by its presence.

The work is an outgrowth of the Software Technology Branch's development of autonomous training systems for space shuttle crew members, flight controllers and other ground support personnel. For

***I** like the idea of helping people who wouldn't normally be helped by general technology. I also like the idea that we're working directly with an outside company so that whatever we make will definitely go out into the real world and help people.'*

—Bob Way, Early Language Intervention System Software Developer

example, a system designed to train Mission Control flight dynamics officers in the process used to deploy payload-assist modules has served as a proof-of-concept for the application of ICAT to training shuttle flight controllers.

### Talking Software

Laureate's talking software programs are used worldwide and have consistently been singled out for their excellence of design and instructional content.

"Laureate has been dedicated to utilizing the best technology available to benefit children with handicaps since 1982," said Laureate President Mary Sweig

Wilson. "We are especially excited about teaming JSC's expertise in artificial intelligence tutors with Laureate's integrated curricular approach to create a new generation of technology for children with disabilities."

### Progress Evaluation

While a number of computer programs for teaching isolated language concepts and vocabulary are available for use with children

who are learning initial language skills, the programs are generally based on a drill and practice model. They present a series of questions to which the child must respond, and they do not adjust the tasks based on the responses of the child. They also "splinter" language skills into bits and pieces that don't provide an integrated approach necessary to smoothly develop a child's language skills.

ELIS will be able to compare a student's performance with a system model, evaluate the student's progress and mastery, catch mistakes, provide extra practice in areas of difficulty and provide feedback to guide the student in solving the problem correctly.

The ELIS project will use "Think C" and C-Language Integrated Production System — another Software Technology Branch product — for code development.

ICAT features that are important to special education include voice input and output, real-time simulation, continuous evaluation of student input, emphasis on the

development of skills in applying concepts, working at a rate suitable to the student and providing diagnostic performance data to the instructor.

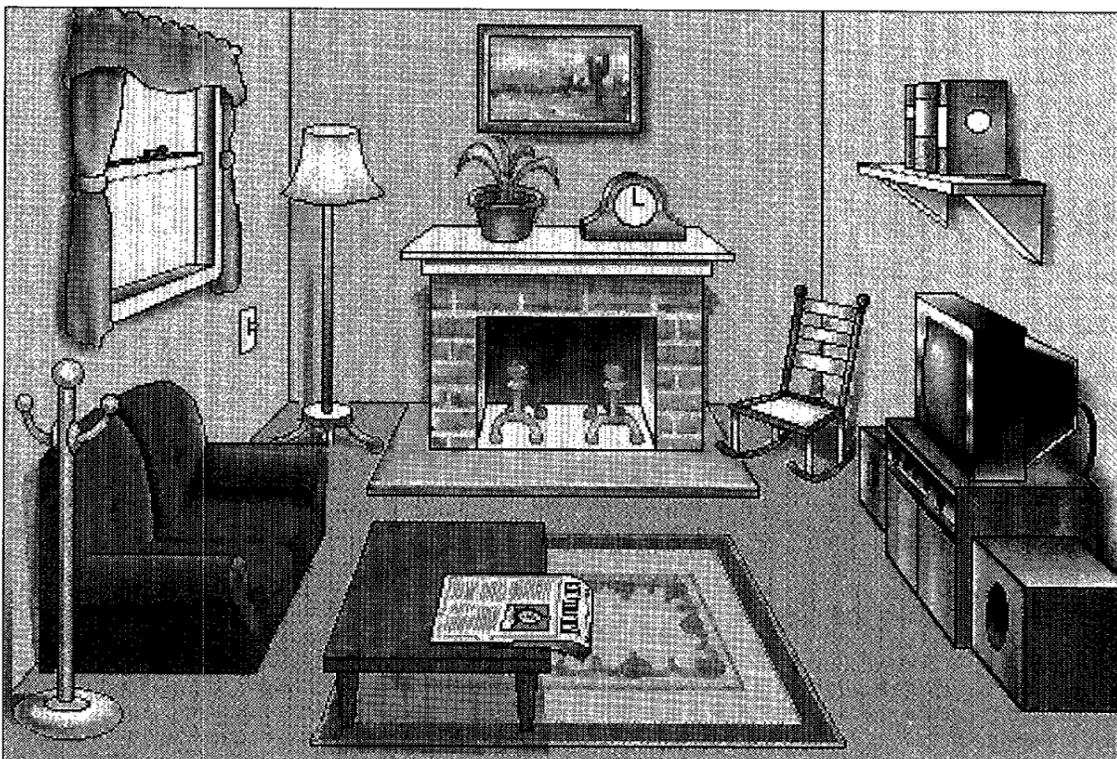
"The ELIS project is demonstrating once again, how use of today's NASA technologies are contributing to the future improvement and well-being of our society," said JSC's Technology Utilization Officer Dean Glenn.

The first phase of the project will develop lesson, screening and interface design drafts, initiate the system design and begin limited testing. Phase II will field test the prototype, integrate speech recognition and advanced multimedia technologies and make final refinements of the system design. The final phase will involve deployment of the initial commercial product, probably in 1994.

### Voice Recognition

ELIS also is being designed with the capability to incorporate new developments such as reliable voice recognition and virtual reality, as they become more practical and affordable. It also may be expanded to address language skills for children at 5-year-old learning levels, integration of fuzzy student model and instructional strategies and integration of virtual environment technology.

"I like the idea of helping people who wouldn't normally be helped by general technology. We normally develop technology for the masses, and I'm sure you wouldn't characterize these people as 'the masses,'" Way said. "I also like the idea that we're working directly with an outside company so that whatever we make will definitely go out into the real world and help people." □



Top: The JSC team working on the Early Language Intervention System project includes, from left, Bowen Loftin of the University of Houston; Bob Savely, chief of ISD's Software Technology Branch; Bill Stevens of the Technology Utilization Office; and Bob Way of Lincom, who works in the Software Technology laboratory.

Left: A simple drawing serves as a language learning tool for special education. Students may point and click on any item with a computer mouse, and the computer will respond by pronouncing the name of the item. The teacher may also place the computer in a prompting mode, in which it will ask the student to point to a particular item.

# Goldin appoints Shea to oversee redesign

(Continued from Page 4)

said. "After scrubbing our estimates, making technical, managerial and phasing changes, and applying planned funding reserves, we now believe our three-year cost problem is approximately \$500 million."

Aldrich listed six primary causes of the growth: an inability to achieve management challenges that resulted from the congressionally mandated 1991 restructuring; an inability to attain productivity gains assumed through contractor bids and projections; an increase in contractor rates due to declining

aerospace business base; a lack of overall design maturity that led to underestimated costs; NASA-directed technical changes to provide operational performance and lower long-term operating costs; and a need to commit budget earlier to long-lead spares.

"I wish I could say with certainty that we understand the cost growth that occurred and have found a simple way to prevent this from reoccurring in this or any other program," Aldrich said. "But, until all the reviews are complete, I cannot provide you with that assessment. In

hindsight, it appears that the program's effort to maintain the tight schedule inadvertently increased the near-term costs and in particular forced Work Package 2 to increase its manpower levels."

Aldrich said that if the program had slipped the major milestone schedule an additional three to six months last fall, it probably could have lived within the existing funding profile.

On Feb. 25, Goldin appointed Dr. Joseph Shea to oversee the redesign of the space station and has provided new policy direction

for contract cost management during the design transition.

As assistant deputy administrator of the agency, Shea will be directly responsible for leading NASA's efforts to develop options for the redesign of the space station, its mission and management structure.

A candidate also will be named, shortly, to establish and chair a blue ribbon panel of outside experts to review and assess NASA's redesign concept and approach.

Shea spent five years with NASA in the 1960s as deputy director of manned space flight and as Apollo

Program manager at the Manned Spacecraft Center (now JSC).

Goldin also announced agency-wide measures to conserve resources and restrict new spending during the redesign transition. In general, no new awards or new work modifications which relate to the current space station program, including support service contracts, will be solicited or issued. Work on existing contracts is not to be accelerated and space station contractors are being advised to discontinue overtime and any further staffing increases.

## Lunar buffs meet at JSC next week

(Continued from Page 1)

March 15—8:30 a.m., Basaltic Achondrites; A Geology of Venus—A Tribute to Valery Barsukov; Solar System Origins; and Impact Cratering and Shock Metamorphism; 1:30 p.m.: Solar, Cosmic Ray and Dynamical Studies; Venus Volcanism; and Manson: The Hole and Shocking Story.

March 16—8:30 a.m.: Primitive Achondrites; Venus Resurfacing and Tectonics; Chicxulub, KT Boundary and Other Impact Ejecta; and Remote Sensing/Space Weathering; 1:30 p.m.: Meteorites and Volatiles; Venus Gravity from Magellan and Mars Geophysics; Large Impact Events—Theory and Observations and Galileo Earth/Moon Results; and Martian Geomorphology.

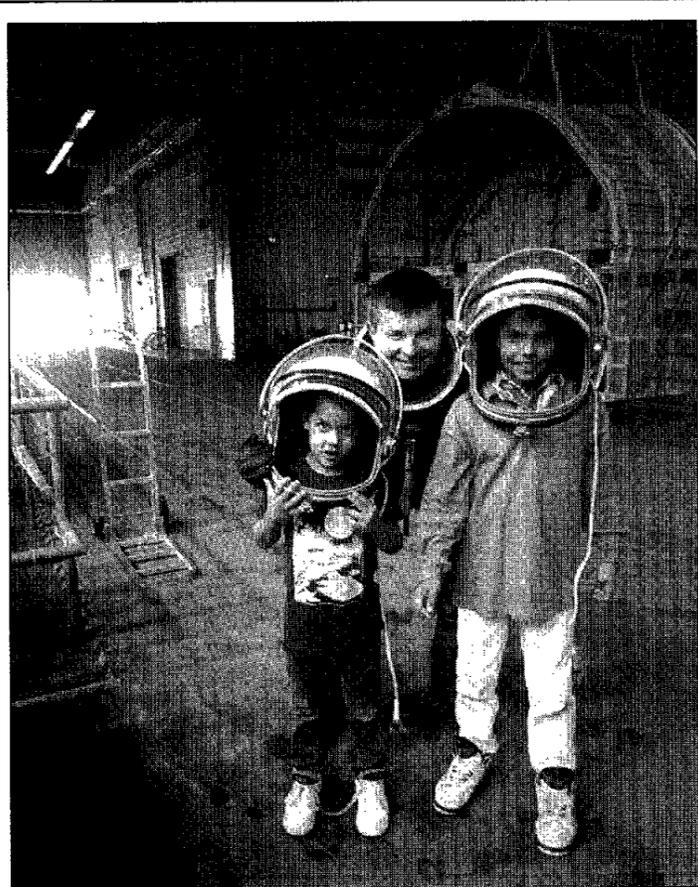
March 17—8:30 a.m.: Interplanetary Dust—Laboratory Studies and Results from Spacecraft; Martian Surface Mineralogy and Spectroscopy; and Moon Rocks—From the Highlands to the Maria to Antarctica; 1:30 p.m.: Ordinary and Enstatite Chondrites; Mars—Tectonics and Volcanism; and Lunar Volcanic Glasses and Regolith. 5:30 p.m.: COMPLEX Plenary: Integrated Strategy for Planetary and Lunar Exploration from 1995 to 2010.

March 18—8:30 a.m.: Carbonaceous Chondrites and Chondrules; Mars—Surface and Atmospheric Processes; Lunar Geology; and Asteroid and Planetary Core Formation and Metal-Rich Meteorites; 1:30 p.m.: Stars, Star-dust and Isotope Anomalies; Outer Solar System; and Future Lunar Exploration.

March 19—8:30 a.m.: Calcium-Aluminum-rich Inclusions and Heat Sources for Chondrule/CAI Melting; Comets and Asteroids; and Educating Young People in Earth and Planetary Sciences.

In addition to the daily sessions, scientists will participate in the two Poster Sessions set for 7-9 p.m. Tuesday and Thursday at the Lunar and Planetary Institute.

The conference is co-sponsored by the Lunar and Planetary Institute and JSC. All sessions are at JSC's Gilruth Center except when otherwise noted.



LIKE FATHER, LIKE SONS—STS-56 Commander Ken Cameron shares the joys of the Weightless Environment Training Facility with his sons, Edward, 5, left, and Robert, 9, during a break in Bldg. 29.

JSC Photo by Andrew Patnesky

## 'Shuttle Into Fun' JSC picnic theme

JSC employees will "Shuttle Into Fun" at the 1993 JSC picnic, scheduled for May 1 at the Gilruth Center.

Danna Hoppens of Kelsey Seybold submitted the winning theme for the annual name-the-picnic contest and will receive a \$100 savings bond and two complimentary picnic tickets. The JSC Picnic Committee received more than 79 theme entries.

Bert Wills and the Crying Shames band is scheduled to perform at the festivities. Picnic activities include carnival rides, spaceball ride, petting zoo, palm readers, clowns, magi-

cians, caricature artists, face painters, James Coney Island food concessions, and the popular Almost Anything Goes event. Other entertainment and special guest appearances are planned.

Four to six teams of three men and three women each are being sought for Anything Goes. Sign up at the Gilruth Center.

Tickets for the "Shuttle Into Fun" picnic will go on sale in early April at the Bldg. 11 Exchange Store.

Anyone interested in helping with the picnic should call Melody Nation at x33152.

## Take Our Daughters to Work still seeking JSC sponsors

Sponsors are still being sought to participate in a new JSC Federal Women's Program education program, "Take Our Daughters to Work," slated for April 28.

Civil servant employees, both men and women, will bring a daughter, niece, cousin or neighbor between the ages of 9 and 15 to their work place to give the girls an opportunity to observe them on the job.

The program is designed to chal-

lenge girls' paradigms about career roles, to encourage them to study math and science, and to explore varied careers in the space program. Activities will begin at 8:30 a.m. in Teague Auditorium.

Enrollment is limited and closing date for participants is March 19. Any civil servant who would like to sponsor a girl in the program should contact FWP Manager Pam Adams at x33761.

## Bulletins to announce reassignment opportunities

(Continued from Page 1)

locality pay, which was scheduled to go into effect in 1994, will be delayed at least a year. Locality pay is designed to bring federal salaries into alignment with what comparable jobs are paying in the private sector in certain areas of the country. This initiative may have resulted in JSC employees seeing some salary increases depending on Bureau of Labor Statistics results.

Clinton's call for a reduction of 100,000 federal workers over the next three years has resulted in a directive for all agencies to reduce the number of their full-time equivalent employees by 4 percent. JSC will take the reduction in three increments — a 1 percent reduction this year and 1 1/2 percent

reductions in fiscal 1994 and 1995. The reductions will be achieved by not hiring replacements for those who retire or quit.

"It means we have to reduce our work force by 37 full-time equivalents by the end of this year," Hartman said. "We intend to do that entirely by attrition. As a result, we expect that we will be under a hiring freeze probably for the balance of this year. But we expect no layoffs and no furloughs."

Speculation about what the current debate over Space Station Freedom will mean to the JSC work force is premature, Hartman said, but the hiring freeze already has forced Cohen's plan to bolster station reserves to shift from emphasizing outside hiring to soliciting inside help.

The new plan will offer 30 to 35 opportunities for internal reassignment to high-priority station jobs — many of them in the area of flight control — with the understanding that the assignments will be on a "detail" basis for the first six months.

Reassignment Opportunity Bulletins for those jobs will be issued in centerwide announcements in the next two weeks. The entire plan should unfold in a month or two.

"Our plan was to devote a mix of our future hiring plus some potential internal movements to cover that," Hartman said. "While in the middle of working that, it became clear because of the administration's mandate that we weren't going to have very much hiring capability left for 1993. Our goal now is to do this with as much vol-

untary participation as we can, give people a chance to indicate to us that they would like to make moves.

"If you hold up your hand for this opportunity, the first six months of the job will be on a detail basis so that if a significant change comes about in the program and that job is no longer there, your home base is still there," Hartman said. "As the program unfolds, if the job is still a high-priority, then it would be made permanent."

Hartman said these new constraints will put JSC's continuous improvement efforts to a serious test.

"We're going to have to find ways to get the job done with fewer people and less resources," he said. "That's just the reality."

## WAR '93 reservations due

"Intelligent, Dexterous Robotics" is the theme of the 1993 Workshop on Automation and Robotics slated for March 24 the Gilruth Center.

Sponsored by the American Institute of Aeronautics and Astronautics and the Automation and Robotics Division, the one-day event will include presentations by Peter Bonasso, MITRE Corp.; Dr. Marcel Schoppers, Robotics Research Harvesting; Jim Lowrie, Martin

Marietta and Dr. Steve Jacobsen, Sarcos, Inc.

The workshop begins at 8:30 a.m. and concludes at 2:30 p.m. Jim Lowrie will present an overview of the Flight Telerobotic Servicer at a luncheon meeting.

Luncheon cost is \$8, but the workshop is free. Reservations are required by Friday, March 19.

For more information, contact Mary Stewart at x31724.

## Discovery mated to external tank, solid rockets

(Continued from Page 1)

for mating to the external tank/solid rocket booster stack Wednesday morning. *Discovery* is slated to fly in early April.

Installation of Spacehab into STS-57 orbiter *Endeavour* was rescheduled to allow some payload bay work to be completed. *Endeavour's* launch is set for late April.

## Space News Roundup

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Swap Shop ads are due at 5 p.m. Fridays outside Bldg. 2, Rm. 147 two weeks in advance of the desired publication date.

Dates and Data submissions are due Wednesdays, eight working days before the desired date of publication.

Editor ..... Kelly Humphries  
Associate Editor ..... Kari Fluegel

## Consolidation of shuttle at JSC to improve coordination

(Continued from Page 1)

essence a production program," Goldin said. He added that under the plan "there must not be any adverse impact on crew safety or overall system safety."

In announcing the shift, Texas Sen. Bob Krueger said the \$378 million external tank activities at Marshall Space Flight Center involves about 90 workers.

"The move to consolidate the management of the Space Shuttle Program at Johnson will make for a leaner, more efficient space operation," Krueger said.

Space Shuttle Program management, under the direction of

Leonard Nicholson, is located at JSC and transfer of the external tank management here is expected to improve coordination and encourage closer working relationships between the various shuttle program elements.

In the long term, personnel savings and other cost and administrative efficiencies may be realized through the move to JSC, NASA officials said.

Marshall will continue to provide design and engineering support to the program as required, an manage any future development projects concerning improvements to the external tank structure.